

### **Abstract (600 word limits)**

Statement of the Problem: Several modalities are available for the treatment of adult obstructive sleep apnea (OSA) such as: continuous positive airway pressure (CPAP) and mandibular advancement devices (MADs). However, both of these therapies require life-long compliance and do not address the underlying cause of the condition. A 25 year old male reported to our office with symptoms of excessive daytime sleepiness. He was screened for OSA, and this screening was followed by an ambulatory, type III, home sleep study (HST), which demonstrated an AHI of 10.8hr<sup>-1</sup>, a mean oxygen saturation (SpO<sub>2</sub>) of 86%, and 539 snoring events. A subsequent diagnosis of mild OSA was reached. On craniofacial and intra-oral examination, it was found that the patient had mild, bilateral torus mandibularis and maxillary hypoplasia, with a transpalatal bone width of 35mm. Therefore, treatment with biomimetic oral appliance therapy (BOAT) was discussed. This type of therapy differs from MADs in that it consists of non-surgical, midfacial redevelopment. After obtaining informed consent, the patient elected to undergo treatment with BOAT, since these devices are FDA-cleared for use in mild to moderate cases of OSA in adults. After 12 months of BOAT, the patient reported that his sleep quality had improved and he was snoring less frequently. On intra-oral examination, it was found that the transpalatal bone width had increased to 36mm. Therefore, another HST was performed with no device in the patient's mouth while sleeping. This follow-up HST demonstrated the sleep architecture appeared to be good: the AHI fell to 4.5hr<sup>-1</sup>; with a mean SpO<sub>2</sub> of 95%, and 257 snoring events without any device in the mouth while sleeping. These findings suggest that biomimetic oral appliance therapy might be able to eliminate OSA in certain adult cases. However, further follow-up studies are needed to determine whether the sleep quality is maintained in the long term.

### **Biography (200 word limit)**

Prof. Dave Singh is a US citizen who was born, educated and trained in England, UK. He holds three doctorates, including Doctor of Dental Medicine; a Ph.D. in Craniofacial Development, and a D.D.Sc. in Orthodontics. He was invited to relocate to the Center for Craniofacial Disorders, USA where he led a NIH-funded program of craniofacial/cleft lip and palate research. Currently, he is a Board Member of the American Sleep and Breathing Association, a member of the World Sleep Federation, an Academic Fellow of the World Federation of Orthodontists, and Fellow of the International Association for Orthodontics, where he was awarded prizes in 2005, 2013 and 2014. He has published over 200 articles and books in the peer-reviewed medical, dental and orthodontic literature, and has lectured in Australia, Asia, Europe, Africa and North America. Currently, Dr Singh is President of Vivos BioTechnologies, Inc

## References (With Hyperlink)

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